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ABSTRACT

Describing the Union 58 Experimental Schools Program (ESP) in northern, rural New Hampshire, this curriculum guide presents the concept of "proximity congruency" as a means for developing secondary level student sensory awareness of the environment in outdoor and/or environmental education procedures. Proximity congruency is defined as a state of harmony existant between two or more animate and/or inanimate objects wherein there is a natural state of interaction. Field trips, nature walks, and site studies are among the outdoor education strategies mentioned in terms of achieving proximity congruency. Additionally, this guide presents four sample environmental education sensory lessons in a format that includes the following: educational focus (land use study, trees, and seashore environment); the concept to be explored; grade range; purpose; and numerous exemplary student activities. When necessary, the lesson also includes specific equipment and procedural needs. (JC)

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STRATEGIES TO AFFECT STUDENT SENSORY AWARENESS OF THE ENVIRONMENT IN A RURAL SCHOOLS SETTING: GRADE SEVEN THROUGH GRADE TWELVE

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ABOUT THE AUTHOR

Richard Peters is currently director of an NIE funded Experimental Schools Program (ESP) project in Northern New Hampshire. This New England site is one of ten such ESP projects funded - nationwide.

The Bachelor of Science in Education and Masters of Education degrees were received from the University of Maine, Orono and the Doctor of Education degree in Curriculum and Instruction was granted by the University of Rochester (NY).

Dr. Peters has educational leadership and supervisory experience as a classroom teacher (grades 5-12); as a K-12 curriculum coordinator; as a grades 9-12 department chairman; as a grades 7-19 ESEA Title III curriculum researcher; as a projects director for Educational Research Associates; and as the ESP project director (since July 1973).

Dr. Peters has provided leadership in the field of public school environmental education since 1970 when he developed a science/social studies elective mini course entitled Man and His Environment. Since then, Dr. Peters has written several published articles; has developed a classroom simulation for STEM, Inc.; has been advisor to several EE projects; and has published a 'How to do it' paper for the National Council for the Social Studies (NCSS) entitled "How to Teach About Human Beings and Their Environment" (#28).

> It is a truism that "man interacts with both natural and social environmental phenomena on a day-to-day basis. Interaction alone is not enough, if we are to intelligently conserve, manage, and protect our natural and human resources. An introduction to - and awareness of the natural surroundings provides a basis for direct human interaction with environmental phenomena and enhances leisure time activities and recreation."[1]

It is upon this premise that the Union 58 Experimental Schools Program (ESP) project has based its student sensory awareness-of-the-environment program; grades seven through twelve.

In order to make one aware - there is a need to, first, affect some change in existing attitudes and perceptions. If children are to become sensitive about the character and quality of the surrounding life space environment; a sensitivity and concern which will remain with them all their adult lives, they must be exposed to the nature and to the beauty - as well as to the necessity - of a quality life space.

If students are to become acutely aware of the things (natural and social artifacts) and people about them, and are expected to better understand their day-to-day interdependence and relationships, then they (the students) must be helped in this process. Under the tutelage of teachers and concerned parents - as well as interested community members - students can be shown that artifacts/elements which comprise the total perceived/non-perceived life space do serve a necessary function.

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[1] Richard O. Peters, "New Hampshire (EE) Program", Environmental Education Report, Volume 4, Number 4, April 1976, pg. 9.

How do you accomplish this degree of tutelage that is necessary in order to affect student attitudes, behaviors, and sensitivity regarding life space environments? How can you (the teacher) bring about the direct interaction of students and life space phenomena? How can students be aided in the development of their sensitivity toward their life space?

PROXIMITY CONGRUENCY

In order for students to become aware of the character and nature of their life space - they must be exposed to it directly! There is both a time and a place for vicarious experiences but when dealing with student attitudes, behaviors and sensitivity about the life space - there is no adequate substitute for direct contact and exposure.

Therefore, there is a need for teachers to develop and offer instructional activities for students which provide for their direct interaction with life space phenomena. Proximity congruency is a state of harmony existant between two or more animate and/or inanimate objects. There is a need to bring objects together so that a natural state of interaction exists.

Proximity refers to a degree of nearness; the relative distance (perceived of physical) between two or more animate or inanimate objects.

If, for example, students are studying trees and their life cycles and the trees are outside the building while the students are inside the classroom - then there exists a state of proximity incongruency; that is, a situation designed

to physically remove environmental life space phenomena one from the other or contrived to isolate and manipulate a given object.

In order to affect a harmony of parts (artifacts) there is a need to create a state of proximity congruency; that is, a situation designed to physically unite environmental life space artifacts for purposes of interaction. Thus, if a teacher wants students to learn about trees and their life cycles then he/she must design learning experiences whereby students leave the school - go out into the environment - and interact directly with the trees on a participatory basis (e.g., study the bark of several different types of trees - appearance and texture; scrutinize leaf colors, shape and structure; and investigate the importance of tree shade to soil moisture and low-to-ground vegetation growth).

There are several strategies that can be used by classroom teachers for purposes of achieving a high degree of proximity congruency between students and life space phenomena.

1. Field Trips. Organized instructional activities that usually involve a large number of students and require mass transportation to a site far removed from the school.
2. Nature walks. Activities for small groups of students which can be conducted either close to the school or far removed. Usually, nature walks do not require bussing and are short in duration (time).

3. Site Studies. If an environmental education program is to really become part of the on-going school curriculum, there is a need to create permanence. As the science classes have a lab space in which to conduct experiments - so does the EE program require a 'place' where student activities can be conducted. This 'place' should be an outdoor EE site; a geographical location where students can be taken and allowed to engage themselves in both structured and free-time activities (e.g., soil sampling, vegetation growth, water testing, pond life, nature's noises, trail hiking).

In conjunction with the outdoor studies, there are several activities which can take place in classrooms and which, in turn, compliment outdoor learning. As is the case with field trips, outdoor activities and experiences require planning and follow-up. Thus, classroom activities may constitute pre-outdoor orientation for students, may be used as a follow-up (review) activity to outdoor experiences, or during certain times of the year (in certain parts of the country when the weather does not permit outdoor activities) may take the place of field studies.

SAMPLE EE SENSORY LESSONS

LAND USE STUDY GRADE RANGE: Grades 7-9

CONCEPT: With increased population, demographic shifts, and increasing demands for fast depleting resources some form of planning is necessary.

PURPOSE: To introduce students to land use planning - what is it? How does it work? How does land use planning effect the community?

ACTIVITIES:

1. Students discuss the physical make-up of a given area: slope of the land, PH, drainage, soil depth, soil color, etc.

2. Students discuss: What is land use planning? They take into consideration the physical make-up of the land, available local resources to do the job, the needs of the community, the goals of the community, etc.

3. Students go outdoors to the area discussed in activity #1 and conduct field studies - to determine slope, PH, drainage, soil depth and color, etc. They each keep a soil data sheet.

4. With data in hand, students develop an area profile - using land use planning worksheets as a format guideline.

5. Students conduct specific experiments at a given site (e.g., soil content, drainage, PH, rock formations, pasture lands, woodlands) and develop site analysis sheets.

6. Students survey the given area and conduct experiments to determine the slope of the land - using both the level and pole methods.

7. Students conduct a soil profile study. They expose different layers of soil and study composition, structure and geology. NOTE: The definition of a soil profile is a verticle section of the soil through all its horizons and extending into the parent material.

TREES GRADE RANGE: Grades 9-12

CONCEPT: Trees are a valuable natural resource which can effect local economics and social growth.

PURPOSE: To acquaint students with the life cycle of trees, the use of wood in manufacturing, and to develop their awareness of the need to conserve and manage this natural 'crop'.

ACTIVITIES:

1. Students discuss the life cycle of a tree; from seed - through primary/secondary growth - to harvest.

2. Students take nature walks in order to come in direct contact with trees for purposes of study their physical characteristics (e.g., bark texture, leaf shape(s), root system(s)), and to note their importance to other flora in a given area.

3. In the classroom, students make a bulletin board showing the different identifying characteristics of trees.

4. Each student identifies a tree and develops an audio-visual report. Release time should be provided so that students can go outside to conduct their study and to gather data/ materials.

5. In the classroom, students make paper.

EQUIPMENT NEEDED:

1. A fine-meshed wire screen
2. A metal pan, a thin tin baking pan works well
3. A forming rack
4. A 10-quart basin
5. A roll of bathroom tissue
6. Blotting paper
7. Instant laundry starch
8. Egg beater (old)
9. Rolling pin (old)
10. Electric iron (old)

PROCEDURE:

1. Cut the bottom out of the pan, leaving around the edge a ½-inch lip.
2. Place the screen, cut to fit, into the bottom of the pan.
3. Place the forming rack over the screen; this can be made from a second pan that will fit into the first. Cut out the entire bottom leaving only the sides.

4. Tear sheets of tissue paper into small pieces and place into the large basin.
5. Mix two cups of water and one tablespoon of starch and add this to the large basin.
6. Add about ten quarts of water.
7. Using the egg beater, beat until it is mixed throughly.
8. Holding the forming rack firmly in the pan, dip the pan sideways into the pulp mixture.
9. Clean off the excess pulp outside the forming rack. Lift out the screen on which the pulp has formed.
10. Dry the screen and wet sheet of pulp between two pieces of blotting paper. The sheet will stick to them. Remove the screen.
11. Press out the excess water with the rolling pin.
12. Iron dry (not too hot) the sheet still between the two pieces of blotting paper.
13. Remove the blotting paper, trim the edge with scissors. You now have a sheet of hand-made paper.

6. Students go out on a forestry field trip and:

a. examine twigs for primary growth;
b. examine tree trunks for secondary growth;
c. test soil for nutrients and other soil conditions (e.g., humus, druff, litter);
d. examine flowers;
e. examine leaves; and
f. discuss forest management techniques with field trip guides.

LAND USE STUDY GRADE RANGE: Grades 10-12

CONCEPT: Man - the adaptor and manipulator - depends upon the land for his continued existence and survival.

PURPOSE: To acquaint students with various community land use, to enable students to identify major beneficial and detrimental effects of land use on selected areas, and to help students evaluate the compatibility of existing land uses with natural conditions.

ACTIVITIES:

1. How is the land in your community being used? Production areas? Human settlement areas? Open space areas? Transportation areas? Recreational areas? Public Service and Utilities areas?

2. Individuals and/or small groups of students select one of the above mentioned six land use area types and plans a graphic studies project.

3. Equipped with graphic media devices (e.g., hand held 8mm motion picture cameras, still/slide cameras, videotape equipment), students visit land use sites and record their impressions and collect data on film or tape.

4. Study groups prepare audio-visual land use reports and present them to the class.

5. Students investigate current community land use control projects.

6. Students conduct community land use studies and make recommendations regarding the future use of community land.

SEASHORE ENVIRONMENT GRADE RANGE: Grades 7-12

CONCEPT: The ocean is a major influence in human survival. Oceans are a major part of the biosphere and therefore an important link in the study of ecology.

PURPOSE: To introduce students to a new ecosystem, to increase their knowledge of diversity of life, and to help students gain a greater appreciation of the ocean.

ACTIVITIES:

1. Students discuss such topics as: the formation of oceans and seashores. The types of rocks found along a selected seashore. Glacial effects on shaping a seashore. Beach formation.
2. Students study ocean topographical maps of a selected seashore area.
3. Students investigate the dangers and hazards of the selected area.
4. Students visit the seashore area and study the rocks as well as the tidal pool life (e.g., crabs, kelp, snails, mussels).
5. Students use plankton nets to collect - and to study the animal and plant life of a body of water.
6. Students participate in a pyramid game related to a seashore food chain. Small groups of students (between four and six students each) demonstrate a food chain; for example, plankton on the bottom, clams on top of the plankton, starfish and/or a sea gull on top of the clams.